

We claim:

1 1. A method for processing multimedia data in a User Datagram Protocol (UDP)
2 layer of a wireless receiver conforming to an Internet Protocol (IP) standard, said method
3 comprising the steps of:

4 receiving error information with said multimedia data from a Radio Link Protocol
5 (RLP) layer; and

6 forwarding said error information with said multimedia data to a higher layer.

1 2. The method of claim 1, wherein said error information comprises a set of
2 logical transmission unit (LTU) error indicators associated with each packet.

1 3. The method of claim 2, wherein said error indicators point to a starting and
2 ending location of erroneous data.

1 4. The method of claim 1, further comprising the step of performing a packet
2 header cyclic redundancy check (CRC).

1 5. The method of claim 4, further comprising the step of forwarding said error
2 indicator, logical transmission unit (LTU) size and a packet payload to the FEC decoder if said
3 packet header is valid.

1 6. The method of claim 4, further comprising the step of forwarding said error
2 indicator and a packet payload to the FEC decoder if said packet header is valid.

1 7. The method of claim 1, further comprising the step of processing said error
2 information to identify an erasure within each packet.

1 8. The method of claim 1, wherein said multimedia data has been encoded using
2 Maximal Distance Separable (MDS) codes.

1 9. The method of claim 8, wherein said Maximal Distance Separable (MDS)
2 codes are Reed-Solomon codes.

1 10. The method of claim 8, wherein said Maximal Distance Separable (MDS)
2 codes are applied to a number, k, of information packets comprised of X data units, and wherein
3 up to X codewords are formed of length n using one data unit from each of said k information
4 packets.

1 11. The method of claim 8, wherein said Maximal Distance Separable (MDS)
2 codes are applied to a number, k, of information packets comprised of X data units, and wherein
3 up to X/L codewords of length nL are formed using L data units from each of said k information
4 packets.

1 12. The method of claim 8, wherein a first set of said Maximal Distance Separable
2 (MDS) codes are applied to each of said information packets comprised of X data units to create
3 k information packets comprised of X' data units, and a second set of said MDS codes are applied
4 to of said information packets comprised of X' data units, and wherein up to X' codewords are
5 formed using one data unit from each of said k information packets.

1 13. The method of claim 1, wherein said error information includes a reformatted
2 packet including frame error information from a lower layer.

1 14. The method of claim 13, further comprising the step of forwarding said
2 reformatted packet to the FEC decoder if a cyclic redundancy check (CRC) on a packet header is
3 valid.

1 15. The method of claim 1, wherein said UDP layer further specifies additional
2 packet handling procedures in accordance with a complete User Datagram Protocol (CUDP).

1 16. A method for receiving multimedia data in a wireless packet network
2 comprising the steps of:

3 processing said multimedia data to determine if said multimedia data is properly
4 received; and

5 forwarding error information with said multimedia data to a higher layer.

1 17. The method of claim 16, wherein said error information comprises a set of
2 logical transmission unit (LTU) error indicators associated with each packet.

1 18. The method of claim 17, wherein said error indicators point to a starting and
2 ending location of erroneous data.

1 19. The method of claim 16, further comprising the step of performing a packet
2 header cyclic redundancy check (CRC).

1 20. The method of claim 16, wherein said multimedia data has been encoded
2 using Maximal Distance Separable (MDS) codes.

1 21. The method of claim 16, wherein said error information includes a reformatted
2 packet including frame error information from a lower layer.

1 22. The method of claim 21, further comprising the step of forwarding said
2 reformatted packet to an FEC decoder if a cyclic redundancy check (CRC) on a packet header is
3 valid.

1 23. The method of claim 16, wherein said UDP layer further specifies additional
2 packet handling procedures in accordance with a complete User Datagram Protocol (CUDP).

1 24. A system for processing multimedia data in a User Datagram Protocol (UDP)
2 layer of a wireless receiver conforming to an Internet Protocol (IP) standard, said system
3 comprising:

4 a memory for storing computer readable code; and
5 a processor operatively coupled to said memory, said processor configured to:
6 receive error information with said multimedia data from a Radio Link Protocol
7 (RLP) layer; and
8 forward said error information with said multimedia data to a higher layer.

1 25. The system of claim 24, wherein said error information comprises a set of
2 logical transmission unit (LTU) error indicators associated with each packet.

1 26. The system of claim 25, wherein said error indicators point to a starting and
2 ending location of erroneous data.

1 27. The system of claim 24, wherein said processor is further configured to
2 perform a packet header cyclic redundancy check (CRC).

1 28. The system of claim 27, wherein said processor is further configured to
2 forward said error indicator, logical transmission unit (LTU) size and a packet payload to the
3 FEC decoder if said packet header is valid.

1 29. The system of claim 27, wherein said processor is further configured to
2 forward said error indicator and a packet payload to the FEC decoder if said packet header is
3 valid.

1 30. The system of claim 24, wherein said processor is further configured to
2 process said error information to identify an erasure within each packet.

1 31. The system of claim 24, wherein said multimedia data has been encoded using
2 Maximal Distance Separable (MDS) codes.

1 32. The system of claim 31, wherein said Maximal Distance Separable (MDS)
2 codes are Reed-Solomon codes.

1 33. The system of claim 31, wherein said Maximal Distance Separable (MDS)
2 codes are applied to a number, k, of information packets comprised of X data units, and wherein
3 up to X code words are formed of length n using one data unit from each of said k information
4 packets.

1 34. The system of claim 31, wherein said Maximal Distance Separable (MDS)
2 codes are applied to a number, k, of information packets comprised of X data units, and wherein
3 up to X/L code words of length nL are formed using L data units from each of said k information
4 packets.

1 35. The system of claim 31, wherein a first set of said Maximal Distance
2 Separable (MDS) codes are applied to each of said information packets comprised of X data units
3 to create k information packets comprised of X' data units, and a second set of said MDS codes
4 are applied to of said information packets comprised of X' data units, and wherein up to X' code
5 words are formed using one data unit from each of said k information packets.

1 36. The system of claim 24, wherein said error information includes a reformatted
2 packet including frame error information from a lower layer.

1 37. The system of claim 36, wherein said processor is further configured to
2 forward said reformatted packet to the FEC decoder if a cyclic redundancy check (CRC) on a
3 packet header is valid.

1 38. A system for receiving multimedia data in a wireless packet network
2 comprising:
3 a memory for storing computer readable code; and
4 a processor operatively coupled to said memory, said processor configured to:
5 process said multimedia data to determine if said multimedia data is properly
6 received; and
7 forward error information with said multimedia data to a higher layer.

1 39. The system of claim 38, wherein said error information comprises a set of
2 logical transmission unit (LTU) error indicators associated with each packet.

1 40. The system of claim 39, wherein said error indicators point to a starting and
2 ending location of erroneous data.

1 41. The system of claim 38, wherein said processor is further configured to
2 perform a packet header cyclic redundancy check (CRC).

1 42. The system of claim 38, wherein said multimedia data has been encoded using
2 Maximal Distance Separable (MDS) codes.

1 43. The system of claim 38, wherein said error information includes a reformatted
2 packet including frame error information from a lower layer.

1 44. The system of claim 43, wherein said processor is further configured to
2 forward said reformatted packet to an FEC decoder if a cyclic redundancy check (CRC) on a
3 packet header is valid.

1 45. A method for transmitting a multimedia packet from a wireless packet
2 network to a wired network conforming to the Internet Protocol (IP), said multimedia packets
3 encoded using a forward error correction (FEC) coding technique, said method comprising the
4 steps of:

5 embedding frame error information in said multimedia packet;
6 forwarding said multimedia packet to a receiver on said wired network; and
7 discarding a multimedia packet having an unrecoverable frame error.

1 46. The method of claim 45, wherein said forward error correction (FEC) coding
2 technique employs Maximal Distance Separable (MDS) codes that are applied to a number, k, of
3 information packets comprised of X data units, and wherein up to X codewords are formed of
4 length n using one data unit from each of said k information packets.

1 47. The method of claim 45, wherein said forward error correction (FEC) coding
2 technique employs Maximal Distance Separable (MDS) codes that are applied to a number, k, of
3 information packets comprised of X data units, and wherein up to X/L codewords of length nL
4 are formed using L data units from each of said k information packets.

1 48. The method of claim 45, wherein said forward error correction (FEC) coding
2 technique employs Maximal Distance Separable (MDS) codes that are applied to each of said
3 information packets comprised of X data units to create k information packets comprised of X'
4 data units, and a second set of said MDS codes are applied to of said information packets
5 comprised of X' data units, and wherein up to X' codewords are formed using one data unit from
6 each of said k information packets.

1 49. A method for transmitting a multimedia packet from a wireless packet
2 network to a wired network conforming to the Internet Protocol (IP), said multimedia packets

3 encoded using a forward error correction (FEC) coding technique, said method comprising the
4 steps of:

5 decoding said multimedia packet using frame error information;
6 forwarding said multimedia packet to a receiver on said wired network; and
7 discarding a multimedia packet having an unrecoverable frame error.

1 50. The method of claim 49, wherein said forward error correction (FEC) coding
2 technique employs Maximal Distance Separable (MDS) codes that are applied to a number, k, of
3 information packets comprised of X data units, and wherein up to X codewords are formed of
4 length n using one data unit from each of said k information packets.

1 51. The method of claim 49, wherein said forward error correction (FEC) coding
2 technique employs Maximal Distance Separable (MDS) codes that are applied to a number, k, of
3 information packets comprised of X data units, and wherein up to X/L codewords of length nL
4 are formed using L data units from each of said k information packets.

1 52. The method of claim 49, wherein said forward error correction (FEC) coding
2 technique employs Maximal Distance Separable (MDS) codes that are applied to each of said
3 information packets comprised of X data units to create k information packets comprised of X'
4 data units, and a second set of said MDS codes are applied to of said information packets
5 comprised of X' data units, and wherein up to X' codewords are formed using one data unit from
6 each of said k information packets.

1 53. A system for transmitting a multimedia packet from a wireless packet network
2 to a wired network conforming to the Internet Protocol (IP), said multimedia packets encoded
3 using a forward error correction (FEC) coding technique, comprising:

4 a memory for storing computer readable code; and
5 a processor operatively coupled to said memory, said processor configured to:
6 embed frame error information in said multimedia packet;
7 forward said multimedia packet to a receiver on said wired network; and

1 54. A system for transmitting a multimedia packet from a wireless packet network
2 to a wired network conforming to the Internet Protocol (IP), said multimedia packets encoded
3 using a forward error correction (FEC) coding technique, comprising:

4 a memory for storing computer readable code; and
5 a processor operatively coupled to said memory, said processor configured to:
6 decode said multimedia packet using frame error information;
7 forward said multimedia packet to a receiver on said wired network; and
8 discard a multimedia packet having an unrecoverable frame error.

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